



# FOOT REFLEXOLOGY : EFFECT ON PAIN AND ANXIETY IN POST OPERATIVE PATIENT

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## ABSTRACT

**BACKGROUND:** This Study gives a direction for application of alternative therapy in management of pain among post operative hospitalized patient (Brenna, Carr and Cousins 2007). Despite the pain medications and anesthetics techniques available, the prevalence of postoperative pain is still high. The prevalence of acute postoperative pain is 80% (Chen, and Mehta, 2003). In foot reflexology, pain modulation is based on Gate Control Theory. The foot as a part of the body, is used to modulate the pain. Each foot contains more than 7000 nerve endings (Bright, 2001) and many studies support that foot reflexology acts help to decrease intensity of pain and anxiety. Reflexology is effective in improving muscle comfort by enhancing blood flow which stimulates parasympathetic nervous system and foot reflexology is a non pharmacological method for maintaining respiration, pulse, blood pressure and manage pain (Hassani, S., Hassani, K. 2015). **OBJECTIVE:** To Assess the effectiveness of foot reflexology on pain and anxiety after surgery. **METHOD:** Keyword searches of PubMed, EBSCO online search of database. **RESULT:** Postoperative pain is caused by tissue damage that induces release of chemical mediators from the surgical wound. Foot reflexology is used as an complementary therapy for pain management and anxiety among post operative patients. **CONCLUSION:** Foot reflexology is an effective complementary therapy used for pain and anxiety management in post operative patients.

**KEYWORDS:** Foot reflexology, Coronary Artery Bypass Graft (CABG), Foot massage, abdominal surgery.

## Introduction:

Worldwide, inadequate management of pain is the source of major human and economic costs for patients, their families and society (Brenna, Carr and Cousins 2007). Despite the pain medications and anesthetics techniques available, the prevalence of postoperative pain is still high. The prevalence of acute postoperative pain is 80% (Chen, and Mehta, 2003). The average rate of major surgery per year in the population is 295 million and global volume of major surgery in 2004 was between 187.2 million and 281.2 million cases per year (Thomas et al., 2008). Many studies support that foot reflexology acts help to decrease intensity of pain and level of anxiety. In United States, paracetamol toxicity is leading indication for liver transplantation (James, Letzige and Simpson, 2009) and use of paracetamol is common cause of poisoning. (Lanes et al.,) Reported that all NSAIDs are having dose dependent toxicity such as dyspepsia, ulceration and bleeding and there is study result, shows that small amount of NSAIDs was associated with risk of death in MI patients.

Foot reflexology stimulates the nerve fibers (A beta fibers). The foot dermato layer contains tactile and pressure receptors which are highly myelinated than the pain fibers where the receptors transmit the impulses to the central nervous system. The dorsal horn of the spinal cord will be activated through the inhibitory interneuron's, whereas the excitatory interneurons are inhibited resulting in inhibition of T-cells functioning, then closing the gate. The pain signal is not transmitted to ascending system of neuron pathway to the brain and the brain does not receive the sensation of pain. Many study results show that foot reflexology can be used as a complementary therapy to decrease the intensity of pain in postoperative patients. Objective of this study is to assess the effectiveness of reflexology on pain and anxiety after surgery. (Chenif C., et al.,)

1. Pathway of pain stimuli from postoperative patient Gate opening: Increase pain perception.
2. Pathway of pain stimuli from the effect of foot massage Gate closing: Decrease pain perception

## Material and methods:

The primary focus of this review on foot reflexology was effectiveness on postoperative patient for reduction of intensity of pain and level of anxiety. Studies included in the review were identified by keyword searches of Pub Med, EBSCO, Research Gate, online search of database. Keywords searched included Foot reflexology, Coronary Artery Bypass Graft (CABG), Alternative Medicine, Foot massage, abdominal surgery. All available studies were based on quantitative methodology.

## Eligibility criteria

- Study based on pain management and use of foot reflexology after surgery.
- Study based on management of anxiety by foot reflexology.
- Study result shows that foot reflexology was an effective complementary therapy for maintaining pain and anxiety.

As a research design used for these reviews were following Blind randomized controlled trial designed, Quasi experimental design, clinical trial design. All studies collected the data for their study through visual analog scale, state trait anxiety scale, Pain Questionnaire (MPQ), Hospital Anxiety Scale, check list, and Randomized control trial study design. In Reviews data was collected by researcher in hospital setting. Standardized pain measurement scale and anxiety measurement scale were commonly used in these reviews. In all included studies the duration of intervention was different in some studies in which they provided reflexology for 20 min and in some studies 40 min in between 1st to 5th day after surgery.

The reviews focused on the period 2008 to 2015 because most of the studies were on management of postoperative pain and use of foot reflexology as complementary therapy done in between these years. The data collection was done before and after interventional therapy. Majority of the studies used visual analog scale for pain measurement of the patient. Non-probability purposive sampling techniques were used in most of the studies. After data collection most of the studies data analyzed by SPSS software and Analyzed by variant (ANOVA) and in some studies descriptive and inferential statistics were used for analysis of data.

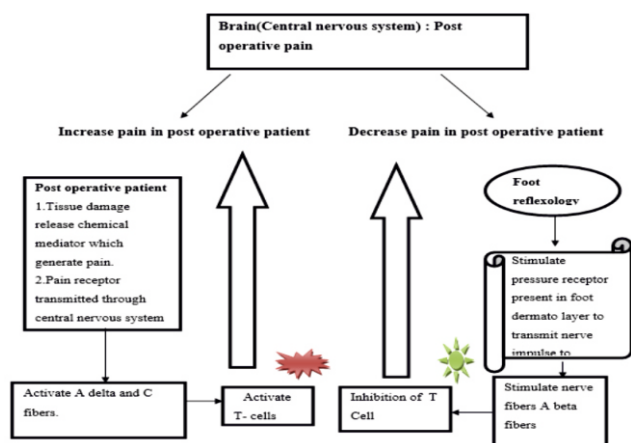
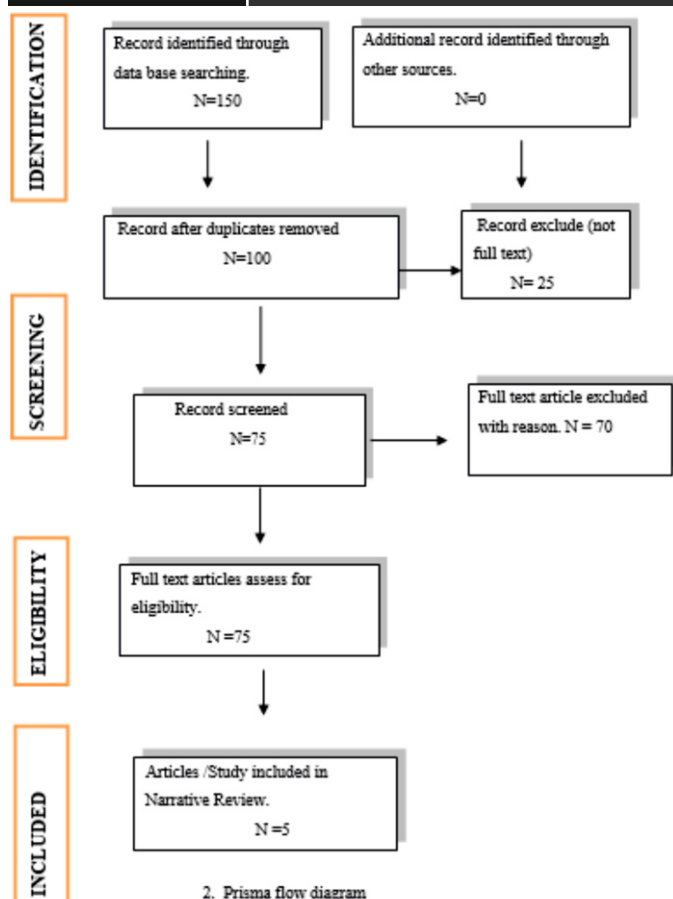


Figure1. Foot reflexology effect on pain among post operative patient summarize according to gate control theory.



### Result

Surgical intervention is one of the major sources of pain and anxiety in post operative patients. Foot reflex massage is effective in management of chronic pain instead of management and study result shows that there is an significant decrease intensity of pain among post operative patient before and after foot reflexology (Shermeh, Sadeghi M., P. R., Bozorgzad. Ghafourian ,A.,Ebadi A, Razmjoei ,N.,Afzali ,M.,Azizi, A. 2009).

Anxiety was decreased after using metatarsus and ankle reflexology therapy. There was significant difference between state anxiety mean scores in control group and metatarsus reflexology massage group and also between control group and ankle reflexology massage group in the first day (Ahmadi M., Ali Akbar Veisi Raygani, Rezaee M., Heydarpour B., Taghizadeh P., 2014).

Reflexology is effective in improving muscle comfort by enhancing blood flow which stimulates parasympathetic nervous system and foot reflexology is a non pharmacological method for maintaining respiration, pulse, blood pressure and manage pain. Study findings also shows that there is an significant effect of foot reflexology on reducing pain and it is an non-pharmacological method for reducing pain and it is most commonly accepted method (Hassani, S., Hassani, k. 2015).

Foot reflex therapy is a useful method for managing sternotomy pain after CABG . According to this study result foot reflexology is an effective treatment for post operative pain management. (Shermeh, Sadeghi M., P. R., Bozorgzad. Ghafourian ,A.,Ebadi A, Razmjoei ,N.,Afzali ,M.,Azizi, A. 2009).

The findings of the study support the need of implementing foot reflexology to post operative pain decrease the intensity of pain and improve the quality and improve sleep pattern among post caesarean mothers. Foot reflexology is a non pharmacological, and simple intervention without any adverse effects. The results proved that the foot reflexology was effective in reducing the post operative pain among post caesarean mothers (Varghese J., George J. , Gowda Y. S. 2014).

Levels of pain were moderately high in postoperatively patient even with paracetamol used by the study participants (Tsay S.L., Chen H.L. , Chen S. C., Lin H. R., Lin K. C., 2008)

**Table-1**  
**Study characteristics foot reflexology use for maintain pain and anxiety among postoperative patient.**

SL NO	Problem statement/Author	Place of research & year	Variables	Tools	Time duration	Outcomes	Remark
1	Effects of reflex therapy on acute postoperative pain and anxiety among patients with digestive cancer. <i>Shiow-Luan Tsay et.al.</i>	Research was conducted at four major medical center in the Northern Taiwan. June 2005.	Independent variable Foot reflexology. Dependent variable Pain and anxiety.	Visual analog scale (VAS), McGill Pain Questionnaire and the hospital anxiety scale.	Foot reflexology therapy was given for 20 minutes on 2nd, 3rd and 4th post operative day.	The post operative patients had perceived moderately high level of pain even with Paracetamol used by this study participants.  This study finding shows that pain and anxiety highly correlated.	Foot reflexology as one of the effective option in the management of acute Post operative pain for patient.  Foot reflexology is useful technique and feasible and it apply in any clinical setting and it support my study and give a direction regarding effect of foot reflexology in post operative patient.
2.	The Effect of foot reflexology On physiological indices and pain severity following cesarean delivery. <i>Shayesteh hassani et.al.</i>	Imam Reza Hospital, Kermanshah, Iran (2015).	Independent variable Foot reflexology  Dependent variable Physiological indices and pain	check list and Interviewing technique was used.	Foot massage in ankle area was 5 min and each foot was 2.5 min. the foot massage provided on 1st and second day of intervention.	Result of the study shows that there was non pharmacological method for management of pain and decreasing physiological indices of pulse rate, temperature was maintained after foot reflexology.	
3.	Effect of foot reflex therapy on sternotomy pain among postoperative CABG (coronary artery bypass graft surgery) patients <i>Sadeghi Shermeh</i>	Three hospitals in Tehran. (2009).	Independent variable Foot reflex massage Dependent variable Sternotomy pain after CABG.	Demographical data questionnaire through Interview, McGill visual pain scale.	10 min right foot massage in reflexology group and 10 min in left foot in placebo group in 6 hours interval in 2 days.	The research outcome states that the foot reflex therapy was effective on sternotomy pain in postoperative CABG patients.  Foot reflexology is an appropriate and effective therapy for reliving pain with pharmacological therapy.	Pain is an displeasing emotional changes as and sensory experience which is associated by any kind of tissue damage.  Surgical intervention is one of the major cause for pain and anxiety with which many people having difficulty to cope up.

4.	Comparing the effect of metatarsus and ankle reflexology massage on patients' state anxiety after coronary artery bypass graft surgery.  <i>Mahnaz Ahamadi et.al.</i>	Imam Ali hospital of Kermanshah in (2012).	Independent variable Ankle reflexology and metatarsus massage. Dependent variable Anxiety	Spilburge's State Anxiety Standard questionnaire, Man-Whitney tests were used for data analysis.	9 to 10 in the morning in the third and fourth days after surgery.	Results show that there is significant difference in the mean of state anxiety scores in three metatarsus, ankle reflexology massage and control groups in the first day of intervention  The minimum anxiety mean score among ankle group and the maximum anxiety man score of the control group.	Metastatic and ankle reflexology is a complimentary method for restoring the relaxation decreasing anxiety among the post operative patient of coronary artery bypass surgery.  This study give direction for application of foot reflexology in management of post operative case and management of life threatening condition
5.	"A Randomized Control Trial to Determine the Effect of Foot Reflexology on Intensity of Pain and Quality of Sleep in Post Caesarean Mothers" Jipi Varghese, Jobby	Selected hospital of Karnataka (2014).	Independent variable Foot and hand reflexology. Dependent variable Pain and quality of sleep.	pitts burgh sleep quality index and Visual analogue scale to assess the intensity of pain.	15-minutes foot reflexology therapy session at the same time each evening at same time in each evening in post operative patients till 5 days of surgery.	Foot reflexology following caesarean section significantly improved the quality of sleep and reduced the intensity of pain.	Nurses should encourage to learn and apply alternative therapy in nursing practice for pain management. Foot reflexology can use as an independent nursing practice for management of pain and it improve sleep pattern of hospitalize patient.

### Discussion:

Results show that there was significant difference in the mean of state anxiety scores in three metatarsus, ankle reflexology massage and control groups in the first day of intervention. The research findings state that the foot reflex massage is effective on sternotomy pain in patients after CABG (Shermeh, Sadeghi M., P. R., Bozorgzad, Ghafourian, A., Ebadi A., Razmjoei, N., Afzali, M., Azizi, A. 2009). There was an significant change in pain score before and after reflexology and change in physiological indices by muscle relaxation. Intensity of pain decreases after application of foot reflexology on second, third and fourth day of digestive surgery. (Tsay Shiow-Luan, Chen Hsiao-Ling, Chen Su-Chiu, Lin Hung-Ru, Lin Kuan-Chia, 2008).

The reflexology can use is an complementary therapy in hospital for pain management of the stress and maintain physiological changes at local and systematic level by maintain vitals and reducing intensity of pain. (Hassani, S., Hassani, k., 2015). Reflexology reduces the anxiety through relaxing the muscles in life threatening condition. Foot reflexology can maintain physiological changes of body after any surgical condition if reflexology used for hospitalize patient. foot reflexology bring local and systematic change physiological change in the patient body. Reflexology therapy can stimulate enkephalin and endorphin they are natural painkiller and mood stabilizer (Taghlili, 2005).

Postoperative reflexology is an effective method in decreasing intensity of pain and respiratory improvement, while it had no effects shown on blood pressure, heart rate and temperature of the post operative patients. Therefore, it is recommended that reflexology be applied as a complementary method to diminish pain in patients with appendectomy for pain management (Baghani et.al.).

Foot reflexology proved useful as an nursing intervention for controlling post caesarean patient pain. (Nastaran, R., Leili., Fatemeh, Y., Habibolah, E., Hoda A., Marzieh 2011). Foot Reflexology is a useful intervention for reducing post-operative pain of subtotal gastrectomy patients and it is also useful for an immediate nursing intervention (Han, H.H., Lee, Y.J., Chae, Y.J., Eun, J.S., Lee H.H., Park, J.W.).

### Recommendation

- Non pharmacological intervention for pain management should be included in nursing care and curriculum.
- In staff development programs complementary therapies training can be included for training program for nurses.
- Pharmacological and non pharmacological both therapies can be used together for reliving post operative pain.

### Conclusion

On the bases of all five studies which included in this narrative review foot reflexology is an effective and chief therapy it can use as a supplement of analgesic and pharmacological treatment of pain in future. It can be used as a safe non invasive therapy for management it requires only trained medical person. Foot reflexology decrease anxiety in all situation without using any lotion, oil and equipment.

Foot reflexology is an important technique which can learn easily and apply in clinical setting in post operative patient by nurses. Alternative therapy should be applied in hospital training and nurse's should get training for complementary therapies specially reflexology and apply it in clinical setting after ethical consideration.

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